



Improving Resiliency to Coastal Flooding

City of Delray Beach

Town Hall Meeting
November 7, 2019



Presentation Overview



Resilience Planning Efforts



Tropic Isle Improvement Project



State & Federal Coordination



Comparison of Seawall Standards In Other Communities



Community Input



Resilience Planning Efforts



Stormwater Master Plan Updates



Seawall Vulnerability Study

Stormwater Master Plan (SWMP) Update

- Update of the City's previous Master Plan from 2001
- Completed by ADA Engineering
- Identified and ranked 14 Problem Areas
- Create a plan to address issues over the next 30 Years
 - Including drainage problems, street flooding, tidal flooding, inadequate infrastructure, stormwater quality and recharge
- Entire Plan Estimated Cost ~ \$380M
 - Tropic Isles Community ~ \$160M



SWMP Implementation Approach

- Current Capital Projects Under Way
 - Tropic Isle Improvement
 - Thomas Street Pump Station
 - Marine Way Drainage & Pump Station
- Future Capital Improvements Projects
 - Using recommendations in the SWMP
 - Available Funding
 - Coordination with other projects
 - Input from residents
- Repair and Rehabilitation – Continuous Effort
 - Pipe Lining
 - Backflow prevention



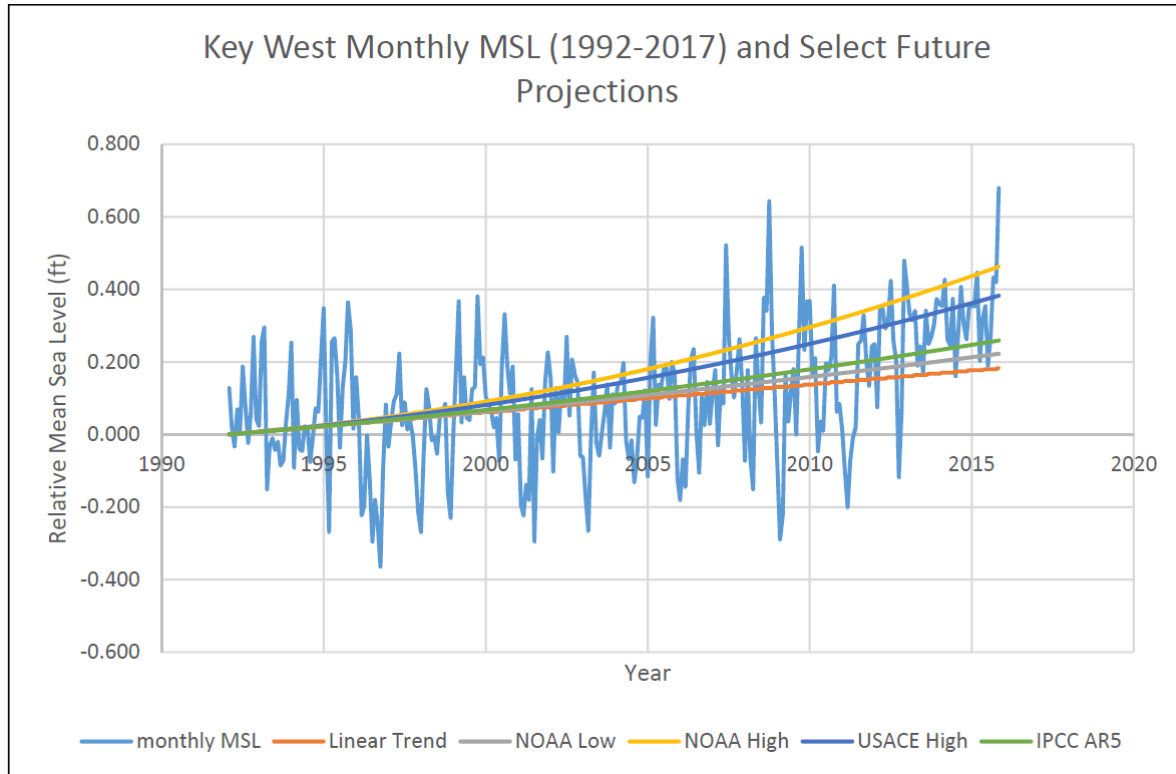
Seawall Vulnerability Analysis

Intracoastal Waterway (ICW) Water Level and Infrastructure Vulnerability Study

- 1 Mile of Public Seawalls
- 20 Miles of Private Seawalls
- Assessed vulnerability to flooding along ICW
 - Water level prediction for 30 years
 - Assessed current conditions of seawalls
- Identified options to protect infrastructure
 - Compared current conditions against water level predictions



30-Year Planning Elevation



Average Daily Maximum
Water Level 2017

1.0 ft.

30 years of Sea Level Rise

0.6-1.1 ft.

5-year Return Period Event

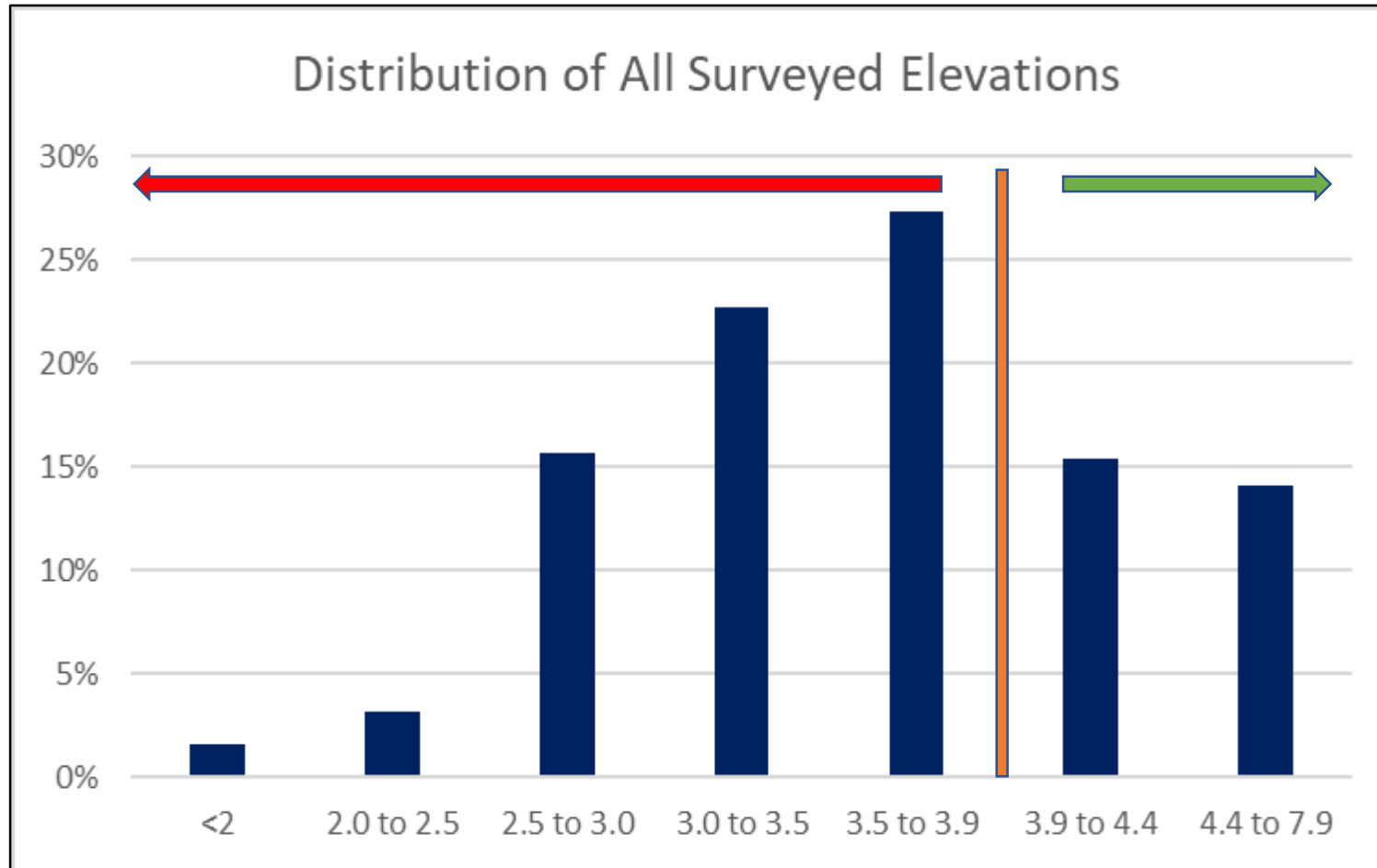
1.8 ft.

Freeboard

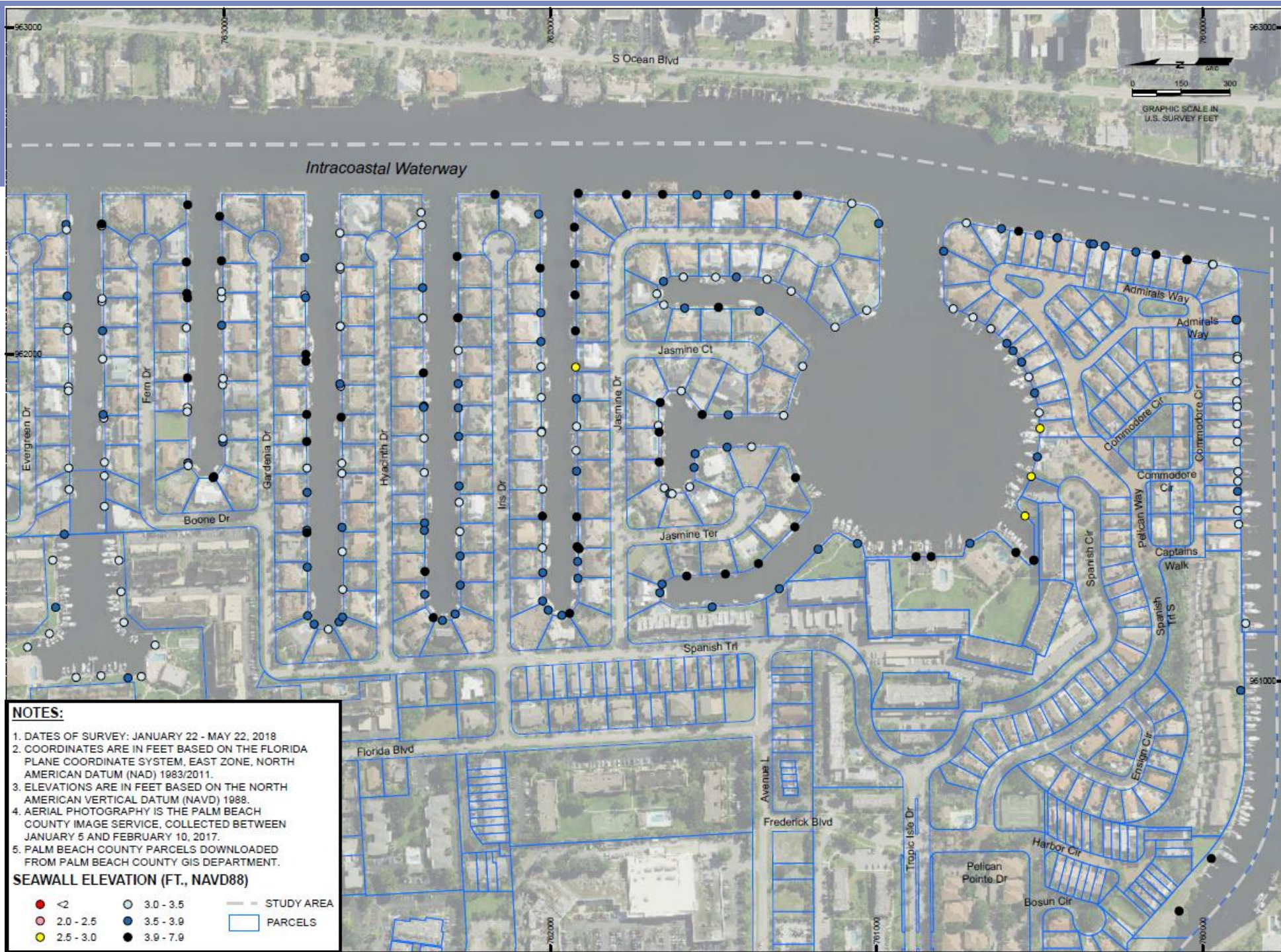
0.5 ft.

3.9 to 4.4 ft. NAVD

Seawall Elevation Analysis



30-Yr Planning
Elevation Range
=
3.9 - 4.4 Ft
NAVD



Seawall Condition Analysis



	Good	Satisfactory	Fair	Poor	Serious	Critical
Public	1	16	9	3	0	0
Private	48	170	450	152	41	7
Total %	4%	19%	53%	18%	5%	1%



Beach Drive





Seawalls - Implementation Approach

- Public
 - 50% of seawalls either already raised or under way
- Private
 - City to adopt Ordinance to Protect City and Residents from Projected Sea Level Rise



2018 Veteran's Park Seawall Improvement



State and Federal Coordination



Community Rating System



National Pollutant Discharge Elimination System



Local Mitigation Strategy



Community Rating System

National Flood Insurance Program Community Rating System (CRS)

- The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements
- As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS:
- Strengthen and support the insurance aspects of the NFIP, and Encourage a comprehensive approach to floodplain management



Community Rating System

Message	Outcome
1. Know your flood hazard	More map information inquiries
2. Insure your property for flood hazard	Increase in the number of flood insurance policies
3. Protect people from the hazard	Fewer water rescues and police citations for ignoring barricades
4. Protect your property from the hazard	Reduced property loss due to flooding
5. Build responsibly	Reduced number of building department citations
6. Protect natural floodplain functions	Improved water quality as reported in NPDES
7. Be prepared for hurricanes and storm surges	Reduced property loss from hurricanes and storm surges
8. Maintain your stormdrains	Reduced street flooding events from clogged stormdrains
9. Drive responsibly in flood events	Reduced reports of stalled cars and home flooding from traffic wake
10. Plan for sea level rise	Increased openness to freeboard restrictions and other mitigation

National Pollutant Discharge Elimination System (NPDES)



- The NPDES permit program addresses water pollution by regulating point sources that discharge pollutants to waters of the United States.
- Created in 1972 by the Clean Water Act, the NPDES permit program is authorized to state governments by EPA to perform many permitting, administrative, and enforcement aspects of the program.
- NPDES permits make sure that a state's mandatory standards for clean water and the federal minimums are being met
 - City participates in countywide MS4 permit with the State of Florida
 - 2018-2019 study reported decreased pollution results!
 - Improve drainage abilities with maintenance of roadways and stormwater conveyance systems
- Joint efforts with neighboring municipalities to reduce phosphorus levels in shared waterways (such as the Lake Ida drainage basin)

Local Mitigation Strategy (LMS2020)



- The City of Delray Beach participates in the Local Mitigation Strategy (LMS) steering committee consisting of all 38 municipalities within Palm Beach County making our City more resilient using local, state, and federal funding sources to mitigate against storm surge, sea level rise and climate change hazards by
 - Increase the number of planning stakeholders we are working with for assessments
 - Analyses of local flooding conditions as it relates to Palm Beach County communities
 - Updates in severities of Pandemic/Communicable Diseases (mosquito borne diseases)
 - Improve project tracking system through online resources that encourage participating communities to document projects to illustrate all the mitigation work being done in Palm Beach County.
 - The City includes mitigation projects in its Master Plans and Capital Improvement plans such as:
 - Tidal Check valves
 - Seawall Improvements
 - Stormwater Pump Stations





Tropic Isle Improvement Project



Neighborhood Improvement Project

Tropic Isle Stormwater Master Plan

- Flood Problem Area Ranking Procedure
 - Level of Service (LOS)
 - Flood Protection Severity Score (FPSS)
 - Linear feet of roadway not meeting LOS
 - Number of buildings not meeting LOS
 - 30 Year Sea Level Rise
 - 100 Year Stormwater Event
- Results
 - Spanish Circle (Area No.10)
 - Ranking No. 9
 - Other Considerations
 - Water / Sewer Pipe Conditions
 - Roadway Pavement Condition Index (PCI)



Tropic Isle Improvement Project

- Scope:
 - 5-Year Improvement Plan
 - Roadway
 - Increased Drainage Pipe Size
 - Water/Sewer Pipes
 - Sanitary Lift Station/Force Main
 - 10-Future Stormwater Pump Stations (end of 20 year)
 - Installation of Check Valves at Outfall Pipes
- Status
 - RFQ for Design Services
 - Design anticipated FY 2020
 - Future Public Outreach Meetings
 - Construction anticipated in FY 2021 - 2026
- Drivers
 - Muck in the Roadway
 - Water/Sewer Age & Pipe Conditions
 - Roadway Pavement Condition Index (PCI)





Seawall Ordinance Comparisons



Comparison of Seawall Standards In Other Communities

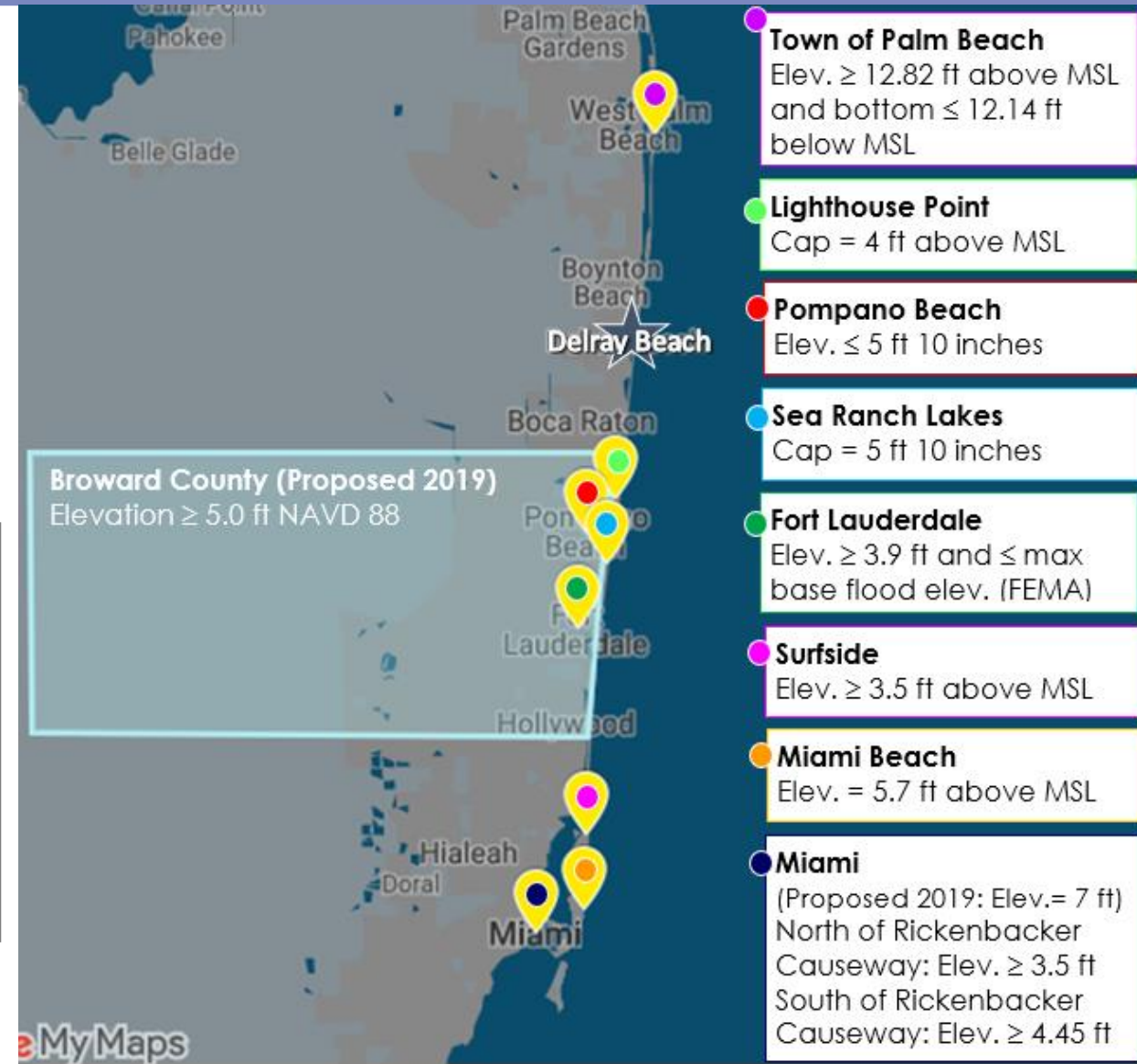
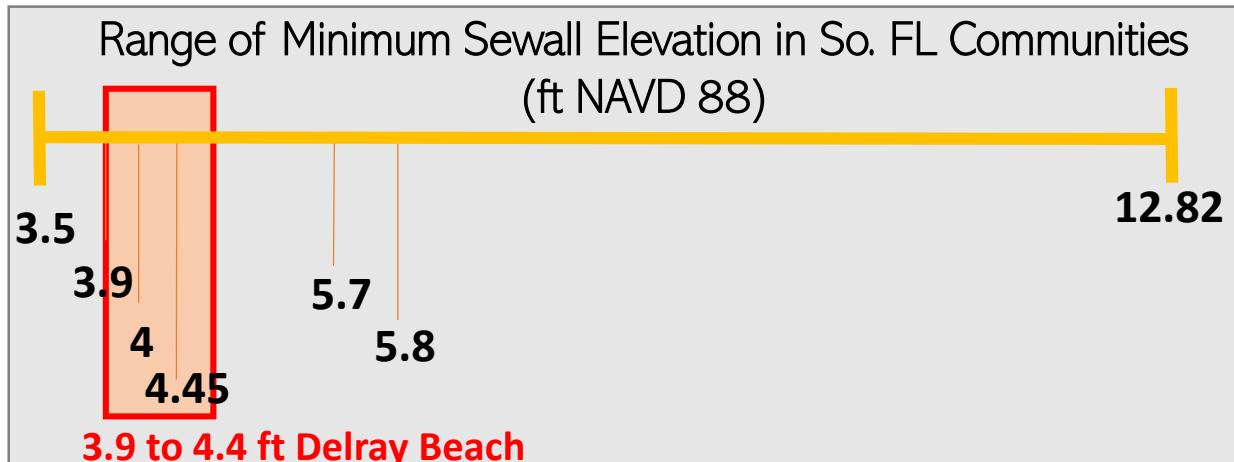


Community Input

Comparison of Seawall Standards In Other Communities

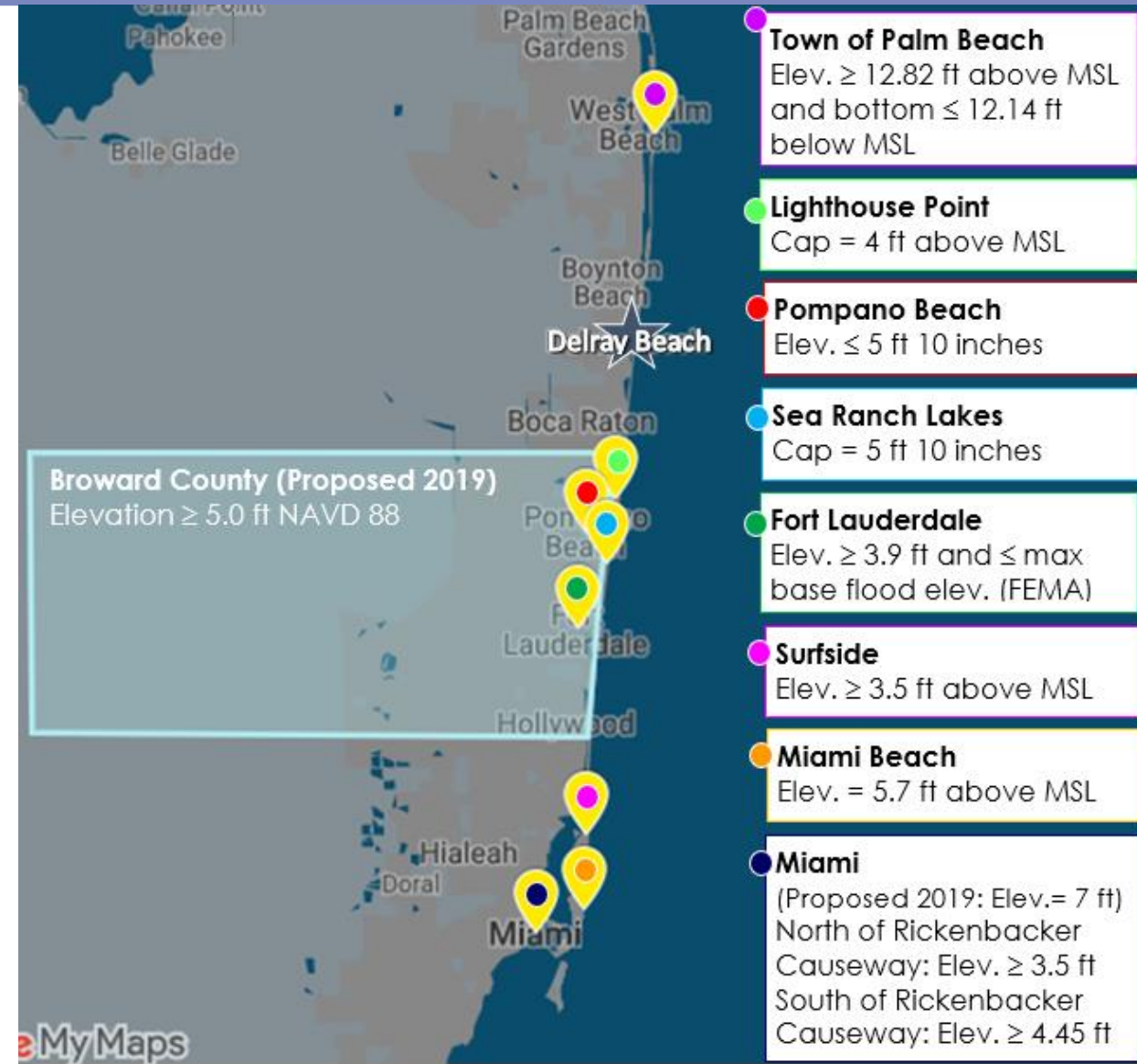


- Pompano Beach has not set a minimum elevation - a max elevation of 5 ft 10 inch.
- Fort Lauderdale utilizes FEMA's base flood elevation to establish maximum elevations in special flood hazard zones.
- Minimum elevations range from 3.5 ft to 12.82 ft



Coastal Resilience Partnership of Southeast Palm Beach County

- Interlocal Agreements between 8 municipalities in SE Palm Beach County to conduct a Climate Change Vulnerability Assessment
- City Commission Meeting
November 19th 4:00pm in City Hall





Community Involvement

What type of seawall standards would you like to see in Delray Beach?



Potential Financial Assistance if HB 365 passes in 2020



Questions?



www.delraybeachfl.gov>>Government>>City Departments>>Public Works>>City Projects

<https://www.delraybeachfl.gov/Home/Components/FacilityDirectory/FacilityDirectory/1412/618>

Cynthia Fuentes

FuentesC@mydelraybeach.com

Issac Kovner

kovner@mydelraybeach.com

Joseph Williams

williamsj@mydelraybeach.com

Molly Daly

dalym@mydelraybeach.com